

REMARKS

Applicants have cancelled claims 26-36 to simplify prosecution.

Claim 22 is the only independent claim. Claim 22 relates to the method disclosed on page 5, line 17-page 6, line 27 (with respect to gamma-manganese dioxide) and in Example 2. The method includes two steps -- (a) heating and stirring a slurry of gamma-manganese dioxide in an aqueous solution including a lithium salt at a lithiation temperature of between 40°C and 120°C to provide a lithiated gamma-manganese dioxide having about 0.22 mole of lithium, and (2) heating the lithiated gamma-manganese dioxide at a temperature of between 150°C and 500°C to remove residual and surface water. Support for the newly added language "heating and stirring a slurry" can be found implicitly on page 5, lines 24-30 (manganese dioxide is not water soluble and thus would be in the form of a slurry during lithiation) and in Example 2 (where the specific words "slurry", "heated", and "stirring" are used). Support for the newly added drying temperature of between 150°C and 500°C can be found on page 6, lines 1-2.

The Examiner rejected claim 22 prior to the present amendment under 35 U.S.C. § 112, ¶ 1 for failure to comply with the written description requirement. The Examiner contends that the lithiation temperature of 40°C to 120°C is "unsupported", apparently because of the reference on page 6, lines 24-25 of heat treating for six hours at 200°C. But the Examiner has confused the lithiation step in claim 22, for which a temperature range of between 40°C and 120°C is used as described on page 5, lines 29-30, and the drying step, for which a temperature range of between 150°C and 500°C is used as described on page 6, lines 1-2. The heat treatment of 200°C referenced by the Examiner involves the drying step; the 200°C is within the more general range of between 150°C to 500°C mentioned earlier on the page.

Thus, the temperature ranges for the lithiation and drying steps have explicit support in the specification. Applicants therefore request that the 35 U.S.C. § 112, ¶ 1 rejection be withdrawn.

Applicants note that the Examiner rejected claim 26 under 35 U.S.C. § 112, ¶ 2 because the Examiner apparently found the phrase "having an x-ray diffraction pattern of gamma-manganese dioxide" redundant with the previous language "gamma-manganese dioxide." Claim 26 has been cancelled. The Examiner did not make an analogous rejection of claim 22, which

includes the same language, but applicants have deleted the clause “having an x-ray diffraction pattern of gamma-manganese dioxide” from claim 22 to make any potential 35 U.S.C. § 112, ¶ 2 issue moot.

Claims 22-26 were rejected under 35 U.S.C. § 102(b) or alternatively, under 35 U.S.C. § 103(a) in view of Li et al., U.S. Pat. 5,599,435 (“Li”). Applicants request that the rejection be reconsidered and withdrawn for the following reasons.

Li discloses a method of preparing manganese dioxide that is much different from the method of claim 22. Li makes an electrochemical cell in which a “working electrode” is made of a “first insertion compound” such as  $\text{Li}_x\text{MnO}_2$ . The working electrode is in contact with an electrolyte including a dissolved lithium salt. When the electrochemical cell is charged, more lithium is inserted into the first insertion compound to provide  $\text{Li}_y\text{MnO}_2$ , in which  $y < x \leq 1$ . Li’s general method is discussed at col. 3, lines 6-31:

The invention is directed to a method for preparing insertion compounds wherein an amount of an element is inserted into a first insertion compound thereby forming a second insertion compound, which is unstable in water comprising: (a) preparing in an electrochemical cell having a working electrode collector, a counter electrode, and a basic aqueous electrolyte, the electrolyte comprising a salt of said element dissolved in water wherein the dissolved element is at a starting concentration and the electrolyte is at a starting pH; (b) electrically contacting said first insertion compound to the working electrode collector thereby forming a working electrode; (c) charging said cell such that electrons and ions of said element are supplied to the working electrode thereby forming the second insertion compound which is unstable in water; (d) maintaining the concentration of the dissolved element in the electrolyte between the starting concentration and a final concentration; the final concentration being greater than zero such that the second insertion compound is stable therein; (e) maintaining the pH of the electrolyte between the starting pH and a final pH; the final pH being a value such that the concentration of  $\text{H}^+$  is an order of magnitude or more less than said final concentration and such that the second insertion compound is stable therein; and (f) isolating the second insertion compound after insertion of the element is complete.

The  $\text{Li}_x\text{MnO}_2$  produced by Li’s method has a much higher lithium content than the about 0.22 required by claim 22. See col. 11, lines 52-55 of Li.

But in any event, the method disclosed by Li is much different from the method covered by claim 22. Claim 22 requires heating and stirring a slurry of gamma manganese dioxide in an aqueous solution including the lithium salt. In contrast, Li charges a cell including a “working

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electrode" containing  $\text{Li}_y\text{MnO}_2$  and an electrolyte including a lithium salt. Li thus does not disclose or suggest heating and stirring a slurry of  $\text{MnO}_2$  as required by claim 22; even attempting such a process would destroy Li's cell.

Moreover, although Li describes drying his  $\text{Li}_x\text{MnO}_2$ , the temperature used for drying is substantially lower ( $80^\circ\text{C}$ - $110^\circ\text{C}$ ) than the drying temperature of between  $150^\circ\text{C}$  and  $500^\circ\text{C}$  required by claim 22.

Thus, the method covered by claim 22 is much different from Li. The dependent claims are patentable for at least the same reasons.

Applicants submit that the claims are in condition for allowance and such action is respectfully requested.

Please apply the \$120.00 Petition for Extension of Time fee and any other charges or credits to deposit account 06-1050, referencing attorney docket no. 08935-301001.

Respectfully submitted,

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